Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision
Former Fulton Manufactured Gas Plant Site
Oswego County, New York
Site Number 738034

March 2009

New York State Department of Environmental Conservation
David A. Paterson, *Governor* Alexander B. Grannis, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Former Fulton Manufactured Gas Plant (MGP) Inactive Hazardous Waste Disposal Site
Oswego County, New York
Site No. 738034

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Former Fulton Manufactured Gas Plant site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Former Fulton Manufactured Gas Plant inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Former Fulton Manufactured Gas Plant site and the criteria identified for evaluation of alternatives, the Department has selected excavation and removal of former MGP related subsurface structures and the impacted soil surrounding them, followed by backfilling with clean soil over a demarcation layer, installation of soil cover, groundwater treatment through introduction of oxygen (or other amendment) into the subsurface, storm sewer rehabilitation and institutional controls including an environmental easement. The components of the remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
2. Excavation and removal of all former MGP related structures and foundations in Areas 1 and 2 determined to contain MGP related contaminated materials to their full depth. Impacted soil in the immediate vicinity of the structures will be removed to the extent practicable.
3. Excavation and removal of approximately 2,822 cubic yards of MGP grossly contaminated

soils. Materials will be removed to depths up to 7 feet bgs or to the extent practicable due to dewatering limitations. The material to be removed will include soil containing visible coal tar or separate phase materials. The approximate excavation boundaries are shown on Figure 4. The actual depth of removal will be based on visual observations in the field; with the concurrence of the NYSDEC. A visible demarcation barrier will be installed at the bottom of the excavation to mark the extent of soil removal prior to backfilling.

4. Excavation areas will be backfilled with clean soil from off-site locations that meet NYSDEC's backfill criteria for intended site use. Excavated soil may be used to backfill the lower portions of the excavation if they meet NYSDEC criteria.
5. Installation and maintenance of a soil cover over Areas 1 and 2. The soil cover shall consist of a minimum of two feet of clean material that meets NYSDEC's backfill criteria and will be required in the top two feet of Areas 1 and 2. National Grid may propose to use other forms of cover such as asphalt or other paving materials to meet the next intended use of the property subject to NYSDEC approval. The type and nature of soil cover to be installed will be determined pursuant to 6 NYCRR subpart 375.
6. Groundwater treatment through introduction of oxygen (or other nutrients, if necessary) in Areas 1 and 2 to enhance aerobic biodegradation of contaminants in groundwater in-situ.
7. Rehabilitation of the storm sewer adjacent to and west of Area 2 to reduce groundwater infiltration into the storm sewer and prevent off-site migration of impacted groundwater. Measures to reduce migration of groundwater through soil beddings underneath the sewer line will be implemented.
8. An institutional control in the form of an environmental easement will be required for the site. The environmental easement will:

   (a) restrict the use of the site to restricted residential use, which will include commercial/industrial uses;

   (b) restrict the use of groundwater at the site;

   (c) require the management of the site in accordance with the provisions of the site management plan, to be approved by the Department; and

   (d) require the property owner complete and submit to the Department a periodic certification.
9. A site management plan (SMP) will be developed and implemented. The SMP will identify the institutional controls and engineering controls (IC/ECs) required for the selected remedy and detail their implementation. The SMP for the selected remedy will include:

   (a) An IC/EC control plan to establish the controls and procedures necessary to; (i) manage remaining contaminated soils that may be excavated from the site during future activities, including procedures for soil characterization, handling, health and safety of workers and the community as well as, disposal/reuse in accordance with applicable Department regulations and procedures; (ii) evaluate the potential for soil vapor intrusion for any future buildings developed on the site, including mitigation of any impacts identified (iii) maintain use restrictions regarding site development or groundwater use identified in the environmental easement; and (iv) require the property owner to provide an institutional control/engineering control (IC/EC) certification on a periodic basis.

   (b) A monitoring plan to monitor the effectiveness of the oxygen injection in groundwater and to monitor the effectiveness of the selected remedy and the trend of contaminant concentrations in the groundwater.

   (c) An operation and maintenance plan to provide the detailed procedures necessary to

contaminant concentrations in the groundwater.

(c) An operation and maintenance plan to provide the detailed procedures necessary to operate and maintain the remedy, including the oxygen injection and cover system. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

MAR 2 4 2009

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the Former Fulton Manufactured Gas Plant (MGP). The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, the operation of a manufactured gas plant at the former MGP site has resulted in the disposal of hazardous wastes, including coal tar containing benzene, toluene, ethylbenzene, xylene and polycyclic aromatic hydrocarbons (PAHs). These wastes have contaminated the soil and groundwater at the site, and have resulted in:

- a significant threat to human health associated with potential exposure to contaminated soil and groundwater

- a significant environmental threat associated with the impacts of contaminants to soil and groundwater

To eliminate or mitigate these threats, the Department has selected the following remedy:

Excavation and removal of former MGP related subsurface structures and the impacted soil surrounding them, followed by backfilling with clean soil over a demarcation layer, installation of soil cover, groundwater treatment through introduction of oxygen (or other amendment) into the subsurface, storm sewer rehabilitation and institutional controls including an environmental easement.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Former Fulton MGP site occupies approximately 1.04 acres in a residential section of the City of Fulton, Oswego County, New York, approximately 10 miles south of Lake Ontario. The Oswego River (which at this point is also a branch of the New York State Barge Canal) adjoins the site's western boundary. South First Street passes through the site, dividing it into parcels designated Areas 1 and 2. Area 1 lies to the east of South First Street, with Area 2 to the west. Both areas are currently vacant, and both are currently owned by National Grid (See Figure 2).

There are four main geologic units beneath the site including (from the ground surface downward) fill, sand and silt, sand and gravel, and till. The water table is shallow, located approximately 1.5 feet to 8 feet below the ground surface (bgs). Shallow groundwater flows to the south and west beneath the site, and into the Oswego River.

The sand deposits are good sources of groundwater, and have been designated as Principal Aquifers by the Department. The aquifer is used as a source of public water supply for the City of Fulton; however, the nearest public wells are located approximately one mile upstream (south) of the site, well outside the area which could be impacted by the site. No private water supply wells exist near the site, as determined by a well survey conducted as part of the remedial investigation.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

A gas manufacturing operation began at the site in 1903 and continued until 1932 when it ceased operation due to availability of natural gas. The manufacturing process involved heating coal and petroleum products to produce a combustible gas. The gas was cooled, purified and then piped to homes and businesses in the surrounding area where it was used for heating and cooking in much the same way that natural gas is used today.

The former MGP facility included a number of different stages of operation and infrastructures, the gas holder, gas tank, oil tank, oil house, coke shed, tar well, and concentrator house. In general, Area 2 contained the gas production facilities and Area 1 contained facilities for storing and distributing the gas. As the gas was cooled and purified prior to distribution, a dark, oily liquid known as coal tar will condense and accumulate in various structures within the MGP. Over the years, tar leaked or was released from the former holders and other structures into the subsurface soils, resulting in the contamination of soil and groundwater.

3.2: Remedial History

In 2003, the Department entered into a multi-site consent order with National Grid. The order obligates National Grid to conduct remedial investigation and remediate the site relative to site contamination resulting from the operation of the former MGP at the site.

National Grid conducted a Preliminary Site Assessment (PSA) study between July 1996 and September 1996. Following up on the PSA, a more detailed Remedial Investigation (RI) was conducted between July 1998 and November 2005.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers. National Grid, the current owner of the site and the corporate successor to the operators of the MGP, is the only identified PRP.

The investigative activities, including a PSA, were conducted under a 1992 Order between the Department and Niagara Mohawk Power Corporation, a predecessor of National Grid. The Department and National

Grid entered into a Consent Order (index # A-0473-0000) in November 2003 that obligates National Grid to implement a full remedial program at the former MGP site. After the remedy is selected, National Grid will be required to implement the remedy pursuant to this 2003 Consent Order.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between July 1998 and December 2008. The field activities and findings of the investigation are described in the RI report, which is available in the document repositories listed in Section 1.

Several field programs consisting of soil, groundwater, sediment evaluation and soil vapor sampling were performed at the site to evaluate the nature and extent of impacts to these media of concern.

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on 6 NYCRR subpart 375-6- Remedial Program Soil Cleanup Objectives..

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI report.

5.1.2: Nature and Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated. As described in the RI report, many soil and groundwater samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for soil. Air samples are reported in micrograms per cubic meter ($\mu g/m^3$).

Table 1 and Figure 3 summarize the degree of contamination for the contaminants of concern in soil and compare the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

The principal waste product produced at the former MGP site was coal tar, which is an oily, dark colored liquid with a strong, objectionable odor and has a physical consistency similar to motor oil, which enables it to move through the subsurface. Coal tar is referred to as a dense non-aqueous phase liquid or DNAPL since it is heavier than water and does not readily dissolve in water. When released into the subsurface, it may sink through the groundwater until it reaches fine-grained material which it cannot penetrate. It can, under certain conditions, move laterally away from the point where it was initially released.

The tar contains high levels of volatile and semi-volatile organic compounds (VOCs and SVOCs). The principal coal tar VOCs are benzene, toluene, ethylbenzene, and xylenes. These compounds, collectively known as BTEX, are slightly soluble in water. Groundwater which comes into contact with tar or tar-contaminated soils may become contaminated with BTEX compounds. This contaminated groundwater can then move through the subsurface along with the ordinary groundwater flow.

The principal coal tar SVOCs are a group of compounds known as polycyclic aromatic hydrocarbons, commonly abbreviated as PAHs. PAH compounds are generally less soluble than BTEX, and are consequently less likely to dissolve in groundwater. This makes PAH compounds less mobile in the subsurface, so the highest levels of PAHs are normally found in proximity to the tar from which they are derived. The specific semivolatile organic compounds of concern in soil and groundwater are the following PAHs:

acenaphthene	acenaphthylene	*dibenzo(a,h)anthracene*	*chrysene*
anthracene	*benzo(a)anthracene*	fluoranthene	fluorene
benzo(a)pyrene	*benzo(b)fluoranthene*	*indeno(1,2,3-cd) pyrene*	2-methylnaphthalene
benzo(g,h,i)perylene	*benzo(k)fluoranthene*	naphthalene	phenanthrene
pyrene			

In this document, PAH concentrations are referred to as either total PAHs (TPAHs) or carcinogenic PAHs (cPAHs). The TPAH concentration is the sum of the concentrations of each (italicized and non-italicized) PAH listed above. The cPAH concentration is the sum of the concentrations of each italicized PAH listed above.

All of the BTEX and PAH contaminants which may dissolve in groundwater are subject to degradation by natural processes. Common soil bacteria are capable of using these chemical compounds as a food source, converting them to carbon dioxide and water. This degradation process will take place more rapidly when abundant oxygen is present in the groundwater, and can in many cases be expedited by the introduction of additional oxygen.

Surface Soil

Surface soil is defined as the soil located at depths from zero to two inches below the ground surface. These are the soils most likely to be encountered by casual users or visitors to the affected areas. Surface soil samples were collected on the site and in background areas nearby, beyond the area of potential influence of the former MGP.

The levels of VOCs detected in surface soil at the site are comparable to sampling results obtained from background samples. BTEX concentrations range from non-detect to 0.01 ppm.

Concentrations of PAHs found in on-site soils were higher than those found in background samples. On-site surface soils show Total PAH concentrations ranging from 0.1 ppm to 271 ppm.

Cyanide was detected in on-site surface soils at concentrations above the Part 375 unrestricted soil clean up objective (SCO) of 27 ppm. Cyanide concentrations detected on site ranged from non-detect to 810 ppm.

Surface soil contamination identified during the RI/FS will be addressed in the remedy selection process.

Subsurface Soil

Subsurface soil contamination was generally limited to the site boundaries. The heaviest contamination in the subsurface soils was found immediately adjacent to former MGP structures that contained tar (see Figure 3). Subsurface contamination was observed at depths ranging from 4 to 28 feet bgs, with the highest levels of contamination found between 4 and 12 feet. Total PAH concentration range from non-detect to 11,341 ppm.

It should be noted that non-MGP related fill materials including cinders, ash and slag were observed at two off-site locations, at depths ranging from surface to 4 feet below grade.

Subsurface soil contamination identified during the RI/FS will be addressed in the remedy selection process.

Groundwater

Total BTEX concentrations in groundwater range from non-detect to a maximum of 2,463 ppb. TPAH concentrations range from non-detect to 8,972 ppb.

No significant groundwater contamination was detected in Area 1. Groundwater contamination was observed in Area 2, largely limited to the shallow zone immediately below the water table. The sole exception was one location in MW-6, where PAHs were detected above SCG values in the deep groundwater zone.

Monitoring wells placed between the site and the Oswego River did not identify any site-related contaminants, thus, it appears that site-related groundwater contamination does not reach the river. These contaminants are known to be biodegradable by ordinary soil bacteria, and this degradation process may explain the lack of observed impacts.

Some contaminated groundwater may be infiltrating into the storm sewer located adjacent and southwest of Area 2. Analytical results of samples obtained from storm sewer manholes located upstream and downstream of the site show the presence of low level concentrations of BTEX.

Groundwater contamination identified during the RI/FS will be addressed in the remedy selection process.

Sediments

Sediment samples collected from the Oswego River during the RI showed no evidence of site-related contamination. Concentrations of constituents detected were below criteria and comparable with upstream background levels.

No site-related sediment contamination of concern was identified during the RI/FS. Therefore, no remedial alternatives need to be evaluated for sediment.

Soil Vapor

Analytical results from soil vapor investigation conducted at the site to determine the potential for soil vapor intrusion into adjacent structures indicated that there is no complete pathway for soil vapor intrusion. Therefore, no remedial alternatives need to be evaluated for soil vapor.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. There were no IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 5 of the RI report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.
No complete exposure pathways currently exist at this site. However, potential exposure pathways are:

- Dermal contact with contaminated soil or contaminated groundwater;
- Incidental ingestion of contaminated soils or groundwater; and
- Inhalation of contaminated soil vapors or dust.

Exposure to contaminated groundwater is unlikely since the area is served by public water. However, the potential for exposure to contaminated groundwater in the future exists if wells were to be installed or construction was to occur below the shallow groundwater table. The potential for exposure to contamination in soils will be addressed by excavating contaminated soil and placing soil cover over the excavation area. However, redevelopment of the site, subsurface utility work or building maintenance work in the future could bring workers into contact with contaminated material or bring contaminated soils to the surface. Where site-related contamination was detected in surface soil, the levels were generally comparable to background soil samples collected from off-site locations.

Analytical results from soil vapor intrusion investigation conducted at the site to evaluate the potential for exposures related to soil vapor into residences off-site indicate there is no complete pathway. Therefore, no further action is necessary. However, the potential for soil vapor intrusion will be evaluated for any future buildings developed on the site, including mitigation of any impacts identified

5.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The Fish and Wildlife Impact Analysis, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. The following potential environmental exposure pathways and ecological risks were investigated:

Analytical results from groundwater samples indicate that shallow groundwater beneath Area 2 of the site is impacted by contaminants resulting from the operation of the former MGP. Although this groundwater impact has resulted in significant damage to the groundwater resource at the site, the contamination has not moved beyond the site boundary and is not reaching the adjacent Oswego River.

Groundwater at the site is not currently being used as a source of potable water, and there are no identified environmental exposure routes for the contaminated groundwater. Soil contamination is generally limited to on-site areas and does not appear to present an exposure risk to ecological receptors under current conditions.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- ingestion/direct contact with contaminated soil;
- inhalation of contaminants volatilizing from contaminated soil;
- eliminate through removal, treatment and/or containment source areas in soil;
- migration of contaminants into the adjacent surface water;

- eliminate through removal, treatment and/or containment, the impact of soil to groundwater;
- potential infiltration of COCs into the storm sewer.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the former Fulton MGP Site were identified, screened and evaluated in the FS report which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth represents the amount of money invested in the current year that will be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring will cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated soils and groundwater at the site.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative will leave the site in its present condition and will not provide any additional protection to human health or the environment. Although this alternative will not require active remediation, it will include groundwater monitoring, an environmental easement and a site management plan. A periodic site review will be performed to 1.) insure that the current site cover (asphalt parking lot and a concrete building foundation floor) provides acceptable level of protectiveness for human health; and 2.) assess any changes in the risk to human health and the environment posed by the site.

The cost to implement Alternative 1, based on an annual operation and maintenance (O&M), for a period of 30 years has been estimated as follows:

Present Worth: *$502,000*
Capital Cost: *$102,000*
Annual Cost (OM&M) *$26,000*

Alternative 2: Limited Excavation, Soil Cover and Sewer Rehabilitation

This Alternative will include removal of MGP related structures and foundations to full depth and impacted soil immediately surrounding the foundations to the extent practicable (see Figure 4). The components of Alternative 2 will include the following:

- Removal of former MGP structures and foundations and surrounding soil in Areas 1 and 2 determined to contain MGP related contaminants/coal tar
- Excavation of grossly contaminated soil in Areas 1 and 2 to a depth of up to 7 feet below ground surface. A visible demarcation barrier will be installed at the bottom of the excavation to mark the extent of soil removal prior to backfilling.
- Installation and maintenance of soil cover over Areas1 and 2. The soil cover shall consist of a minimum of two feet of clean material that meets NYSDEC's backfill criteria and will be required in the top two feet of the excavated area.
- Enhancement of natural biodegradation processes in groundwater through introduction of oxygen (or other nutrients) into soil in Areas 1 and 2, if deemed necessary.
- Rehabilitation of the adjacent storm sewer west of Area 2 to reduce groundwater infiltration into the storm sewer; and prevent off-site migration of impacted groundwater
- Institutional Controls including an Environmental Easement to restrict future use of the site consistent with the selected remedy
- Site management plan that will include groundwater monitoring.

The cost to implement Alternative 2, based on the site management plan, for a period of 30 years has been estimated as follows:

Present Worth: *$3,943,000*
Capital Cost: *$3,583,000*
Annual Cost (OM&M) *$24,000*

Alternative 3: Excavation, Capping and Cutoff Wall

This Alternative will include a combination of soil removal, capping and installation of containment wall (see Figure 5). The components of Alternative 3 will include the following:

- Excavation and removal of MGP-related structures and grossly contaminated soil in areas 1 and 2 to a depth of up to 7 feet bgs
- Installation and maintenance of a low permeability cover over Area 2 to reduce infiltration of rain water into the subsurface impacted material not removed by excavation as well as to mitigate potential exposure to impacted material
- Installation of a sheet pile cutoff wall to prevent off-site migration of impacted material
- Institutional controls including an Environmental Easement to restrict future use of site consistent with the selected remedy; and
- Site management plan to include groundwater

The cost to implement Alternative 3, based on site management plan, for a period of 30 years has been estimated as follows:

Present Worth: *$5,739,000*

Capital Cost:.....$5,319,000
Annual Cost (OM&M):.....$27,300

Alternative 4: Excavation of Soil Above Soil Cleanup Objectives

This Alternative will include extensive soil removal for the purpose of restoring the site to pre-release conditions to the extent practicable. Soil containing individual constituents greater than part 375-6 NYCRR Unrestricted Use soil cleanup objective (SCOs) will be excavated to a depth up to 33 feet bgs (see Figure 6). MGP related subsurface structures and their foundations will be removed to full depth. The components of Alternative 4 will include the following:

- Excavation of approximately 12,000 cubic yards of impacted materials to a depth up to 33 ft bgs
- Removal of former MGP related structures to full depth
- Restoration of Area 1 and 2 to include installation of soil cover at a minimum.
- Groundwater dewatering in the excavation area for off-site treatment and disposal.
- Environmental easement to preclude site groundwater use

The cost to implement Alternative 4 has been estimated as follows:

Present Worth:.....$12,356,000
Capital Cost:.....$12,036,000
Annual Cost (OM&M):.....$21,000

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed “threshold criteria” and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative’s ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

The next five “primary balancing criteria” are used to compare the positive and negative aspects of each of the remedial strategies.
3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectivness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

Community Acceptance - Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the Department addressed the concerns raised. In general, the pubic comments received were supportive of the selected remedy.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the Department has selected Alternative 2, which will include removal of MGP related structures and foundations including surrounding soil in Areas 1 and 2 to a depth of up to 7 ft bgs, installation of soil cover, oxygen enhancement treatment of groundwater if deemed necessary, adjacent sewer rehabilitation, environmental easement and a site management plan as the remedy for this site. The elements of this remedy are described at the end of this section.

The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS. The selected remedy, when fully implemented, will mitigate the threats to public health and the environment presented by the contaminated materials at the site. The selected remedy will achieve the remedial action objectives (RAOs) and comply with applicable environmental laws, regulations and other standards and criteria.

Alternative 1 will not include active remedial actions and thus will not provide additional protection to human health and the environment over what currently exists. This alternative will not comply with SCGs, since source materials and other MGP-related structures will remain in place and continue to pose a threat to both human health and the environment. This alternative was therefore eliminated from

further evaluation.

Alternatives 2, 3 and 4 will all provide some level of protection to public health and the environment and are retained for consideration. Balancing criteria are used to evaluate the alternatives in relation to one another.

Alternative 2, which will include soil excavation, including removal of former MGP related structures and foundations, storm sewer rehabilitation, site cover and groundwater treatment will provide protection to human health and the environment. Although some levels of contamination will remain under this alternative, the contamination will be located at depth, below the water table, where future contact with human or ecological receptors is unlikely. The combination of excavation, groundwater treatment and site cover will address the SCGs and meet remedial action objectives (RAOs) established for the site.

Alternative 3, which will include excavation and removal of soil and MGP related structures, capping, cutoff wall and oxygen application will provide protection to human health and the environment. This alternative, similar to Alternative 2 will address SCGs and meet RAOs. The cutoff wall component of this remedy will provide a higher level of protection against off-site migration of site contaminants compared to Alternative 2. However, there is no evidence of NAPL migrating off-site. In addition, the wall installation will result in greater impacts in the surrounding neighborhood, including noise impacts, and will require a longer period of construction. Also, the cut-off wall will modify existing groundwater flow paths and thus could create groundwater mounding effects that could result in basement flooding at adjacent properties. The added level of protection, at a site where the contamination is having relatively little impact, will not justify the additional time, expense, and short & long term impacts to the surrounding community. Alternative 3 will be less desirable when compared to the selected Alternative.

Alternative 4, which will include complete removal of contaminated materials above 6 NYCRR unrestricted use levels, will provide a greater degree of protection for human health and the environment than Alternatives 2 and 3. However, the increased protection is modest, and will require far more extensive construction activities with far greater community impacts. The excavation will be much deeper which will require extensive groundwater dewatering. The sharp increase in the amount of soil excavated, will result in a significant increase in truck traffic compared to the other alternatives. While this alternative will result in a reduction in volume of contaminated source materials on site, it will create greater short-term adverse impacts on nearby residents during construction (i.e. heavy traffic, noise, odors), while providing only minimal additional protection of human health and the environment over the selected remedy. The incremental cost of over $8 million and the significantly increased community disruption associated with this alternative over the selected alternative will not be justified by the marginal increase in protection to human health and the environment. In addition, Alternative 4 will be very difficult to implement given the site constraints. Alternative 4 will be less desirable than the selected remedy.

Alternative 2 is being selected as it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. Alternative 2 will provide adequate and comparable level of protection to human health and the environment as Alternatives 3 and 4 with less disruption to the community. Alternative 2 will achieve the remediation goals for the site as it will remove the grossly contaminated materials through excavation and off site disposal. Alternative 2 will prevent or reduce the potential for off-site migration of MGP related contaminants through storm sewer rehabilitation, and groundwater treatment using oxygen compounds or other amendments if determined necessary. Alternative 2 is readily implementable and will permanently reduce the toxicity, mobility and volume of impacted

material at the site. Alternative 2 will provide the most balanced and cost effective remedy to address the site contamination.

The estimated present worth cost to implement the remedy is $ 3,943,000. The cost to construct the remedy is estimated to be $ 3,583,000 and the estimated average annual costs for O& M over a period of 30 years is $ 24,000.

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
2. Excavation and removal of all former MGP related structures and foundations in Areas 1 and 2 determined to contain MGP related contaminated materials to their full depth. Impacted soil in the immediate vicinity of the structures will be removed to the extent practicable.
3. Excavation and removal of approximately 2,822 cubic yards of MGP grossly contaminated soils. Materials will be removed to depths up to 7 feet bgs or to the extent practicable due to dewatering limitations. The material to be removed will include soil containing visible coal tar or separate phase materials. The approximate excavation boundaries are shown on Figure 4. The actual depth of removal will be based on visual observations in the field; with the concurrence of the NYSDEC.. A visible demarcation barrier will be installed at the bottom of the excavation to mark the extent of soil removal prior to backfilling.
4. Excavation areas will be backfilled with clean soil from off-site locations that meet NYSDEC's backfill criteria for intended site use. Excavated soil may be used to backfill the lower portions of the excavation if they meet NYSDEC criteria.
5. Installation and maintenance of soil cover over Areas 1 and 2. The soil cover shall consist of a minimum of two feet of clean material that meets NYSDEC's backfill criteria and will be required in the top two feet of Areas 1 and 2. National Grid may propose to use other forms of cover such as asphalt or other paving materials to meet the next intended use of the property subject to NYSDEC approval. The type and nature of soil cover to be installed will be determined pursuant to 6 NYCRR subpart 375.
6. Groundwater treatment through introduction of oxygen (or other nutrients, if necessary) in Areas 1 and 2 to enhance aerobic biodegradation of contaminants in groundwater in-situ.
7. Rehabilitation of the storm sewer adjacent to and west of Area 2 to reduce groundwater infiltration into the storm sewer and prevent off-site migration of impacted groundwater. Measures to reduce migration of groundwater through soil beddings underneath the sewer line will be implemented.
8. An institutional control in the form of an environmental easement will be required for the site. The environmental easement will:
   (a) restrict the use of the site to restricted residential use, which will include commercial/industrial uses;
   (b) restrict the use of groundwater at the site;
   (c) require the management of the site in accordance with the provisions of the site management plan, to be approved by the Department; and
   (d) require the property owner complete and submit to the Department a periodic certification.
9. A site management plan (SMP) will be developed and implemented. The SMP will identify the institutional controls and engineering controls (IC/ECs) required for the selected remedy and detail their implementation. The SMP for the selected remedy will include:
   (a) An IC/EC control plan to establish the controls and procedures necessary to; (i) manage

remaining contaminated soils that may be excavated from the site during future activities, including procedures for soil characterization, handling, health and safety of workers and the community as well as, disposal/reuse in accordance with applicable Department regulations and procedures; (ii) evaluate the potential for soil vapor intrusion for any future buildings developed on the site, including mitigation of any impacts identified (iii) maintain use restrictions regarding site development or groundwater use identified in the environmental easement; and (iv) require the property owner to provide an institutional control/engineering control (IC/EC) certification on a periodic basis.

(b) A monitoring plan to monitor the effectiveness of the oxygen injection in groundwater and to monitor the effectiveness of the selected remedy and the trend of contaminant concentrations in the groundwater.

(c) An operation and maintenance plan to provide the detailed procedures necessary to operate and maintain the remedy, including the oxygen injection and cover system. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established
- A fact sheet announcing a public meeting to present a Proposed Remedial Action Plan was sent to the public contact list established for the site
- A Public Meeting was held on February 25, 2009 to present and receive comments on the Proposed Remedial Action Plan (PRAP).
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP

Groundwater	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND - 980	1	15 of 51
	Toluene	ND – 93	5	13 of 51
	Ehtylbenzene	ND - 590	5	15 of 51
	Xylene (Total)	ND - 800	5	15 of 51
	Total BTEX	ND – 2,463	NA	NA
Semivolatile Organic Compounds (SVOCs)	Acenaphthene	2J - 460	20	12 of 51
	Naphthalene	1J - 4800	10	16 of 51
	Benzo(a)anthracene	2.5J - 200	0.002	7 of 51
	Total CPAH	ND – 942 J	NA	NA
	Total PAH	ND – 8972 J	NA	NA
Inorganic	Cyanide	ND – 5300 J	200	11 of 31

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND – 0.0037 J	4.8	0 of 18
	Toluene	ND – 0.0026 J	100	0 of 18
	Ethylbenzene	ND	41	0 of 18
	Xylene (total)	ND – 0.0007 J	100	0 of 18
Semivolatile Organic Compounds (SVOCs)	Acenaphthene	0.005 J – 0.48 J	100	0 of 32
	Naphthalene	0.007 – 2.4 J	100	0 of 32
	Benzo(g,h,i)perylene	0.006 J - 16	100	0 of 32
	Dibenz(a,h)anthracene	0. 079 J – 4.1 J	0.33	3 of 32
	Chrysene	0.011 J - 25	3.9	6 of 32

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND – 11 J	4.8	2 of 115
	Toluene	ND – 20 J	100	0 of 115
	Ethylbenzene	ND - 63	41	2 of 115
	Xylene (total)	ND – 120	100	2 of 115
	Total BTEX	ND – 193.5 J	10	10 of 115
Semivolatile Organic Compounds (SVOCs)	Acenaphthene	0.016 J – 450	100	2 of 201
	Naphthalene	0.024 J – 2100	100	16 of 201
	Benzo(a)anthracene	0.015 J - 950	1	64 of 201
	Total CPAH	ND – 4370 J	10[c]	56 of 201
	Total PAH	ND – 11341 J	500[c]	22 of 201
Metals	Cyanide	ND – 2000 J	27	0 of 26

Soil Vapor	Contaminants of Concern	Concentration Range Detected (mcg/m^3)	SCG[b] (mcg/m^3)	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	1,2,3-Trmethylbenzene	ND – 290 J	N/A	N/A
	Benzo(b)thiophene	ND – 92 J	N/A	N/A
	Indane	ND – 52 J	N/A	N/A
	Indene	ND – 930 J	N/A	N/A
	1,2,4,5-Tetramethylbenzene	ND – 130	N/A	N/A

ppm – parts per million (mg/kg)
ppb – parts per billion (ug/kg)
mcg/m^3 - micrograms per cubic meter
J – Estimate Value
ND – Not detected
NA – Not applicable
SCGs – Standards, Criteria and Guidance values
[a] New York State Department of Environmental Conservation, Technical and Operational Guidance Series (1.1.1), Class GA Standards and Guidance Values, Revised June 1998.
[b] 6 NYCRR Part 375, Table 375-6.8(b): Restricted Use Soil Cleanup Objectives, Protection of Public Health, Residential, December 14, 2006
[c] New York State Department of Environmental Conservation, Technical and Administrative Guidance Memorandum (TAGM) 4046: Recommended Soil Cleanup Objectives, January 11, 2001.

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1: No Action	$102,000	$26.000	$502,000
Alternative 2: Limited Excavation, Capping and Sewer Rehabilitation	$3,583,000	$24,000	$3,943,000
Alternative 3: Excavation, Capping and Cutoff Wall	$5,319,000	$27,300	$5,739,000
Alternative 4: Excavation of soil above soil cleanup objectives	$12,036,000	$21,000	$12,356,000

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Former Fulton MGP Site
Oswego County, New York
Site No. 738034

The Proposed Remedial Action Plan (PRAP) for the Former Fulton MGP site, was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 17, 2009. The PRAP outlined the remedial measure proposed for the contaminated soil, and groundwater at the Former Fulton MGP site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on February 25, 2009, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 21, 2009. This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1

I live next door to Area 1 and I'm looking to sell my property and move to a smaller home in the next few years. Will this impact the sale of my property? Will this project be wrapped up by summer 2011?

RESPONSE 1

According to the current schedule, we anticipate that the construction of the remedy should be completed by the fourth quarter of 2011. Although there may be some disruption to the surrounding neighborhood during construction, successful remediation of the site is expected to be beneficial to the surrounding properties.

COMMENT 2

Our other biggest concern is health problems. We want to see it cleaned up.

RESPONSE 2

We appreciate your concern about possible health effects and as the investigation began,

evaluating the possibility for exposures to site contaminants was our first priority. We determined that there are no complete exposure pathways at this site; however exposures could occur in the future if site conditions were to change. National Grid is committed to cleaning up the property to ensure that exposures will not be a concern in the future.

COMMENT 3

What you're saying is that it will be another couple of years before anything gets started?

RESPONSE 3

We expect the Record of Decision to be issued by the end of March 2009. Following the ROD the remedial design process begins, during which the need for additional investigation work to further refine the lateral and vertical extent of impacted materials will be evaluated. The disign is expected to take about a year to complete. Construction work could start after the design is approved by the Department.. The Department has found that it is often a good idea to conduct the excavation portion of the remedial work during the winter months, since the cooler temperatures reduce the potential for creating nuisance odors in the surrounding community.

COMMENT 4

What will the cap be made out of?

RESPONSE 4

The soil cover will consist of a minimum of two feet of clean fill that meets Department's backfill criteria,. Additionally, the remedy requires a demarcation layer between the soil cover and any remaining contaminated soil. However, National Grid may propose to use other forms of cover such as asphalt or other paving materials to meet the next intended use of the property. Department approval will be required for such a design.

COMMENT 5

What about the test wells? Will those be cut down? That would be nice.

RESPONSE 5

Some of the existing wells will be removed as part of the remediation. The remaining ones, which will be used for groundwater monitoring, will be cut down flush with the ground surface.

COMMENT 6

I moved into a house next door to the site right after the war, and still live there. The tar smell has been there ever since I was a little girl. We had leased property from National Grid and had brought in a lot of fill. If I let them into my yard now to test and they find something, can

something be done?

RESPONSE 6

During the design process, additional samples will be collected along the property line dividing your property from the site. If analytical results indicate the presence of MGP related contaminants at levels of concern, or if they present an odor nuisance, remedial actions will be taken to mitigate the impact.

COMMENT 7

What is the status of the church property? Why was the church torn down but not the slab?

RESPONSE 7

The church was demolished a few years ago, after the property was acquired by National Grid. The slab was left in place to act as a barrier to physical contact or exposure to any contaminated material which may have been underneath the slab. The slab is slated for removal as part of the excavation and will be replaced with the soil cover discussed in Response 4.

COMMENT 8

I am concerned about cyanide. I hear that word and it raises a flag.

RESPONSE 8

Cyanide compounds are commonly found at MGP sites.We appreciate your concerns about the presence of cyanide in shallow soil. Cyanide can exist in many chemical forms, only one of which, “free cyanide”, is toxic. In the wastes typically found at MGP sites, the cyanide is in a form which is very tightly bound to iron, and in this form it is far less toxic.

COMMENT 9

In late 2006-2007 National Grid addressed a water line/drainage issue on my property. I hope this remedy won’t impact that. National Grid has always been cordial and kind to deal with throughout all of this.

RESPONSE 9

The remediation will include measures to avoid or address the potential for impacts to, or on, adjoining properties. In the event of damage to your drainage system or water lines during construction, the system and or lines will be restored to their original state at no cost to you.

APPENDIX B

Administrative Record

Administrative Record

Former Fulton MGP Site
Site No. 738034

1. Proposed Remedial Action Plan for the Former Fulton MGP site, dated February 2009, prepared by the Department.

2. Order on Consent, Index No.A-0473-0000, between the Department and National Grid, executed in November 2003.

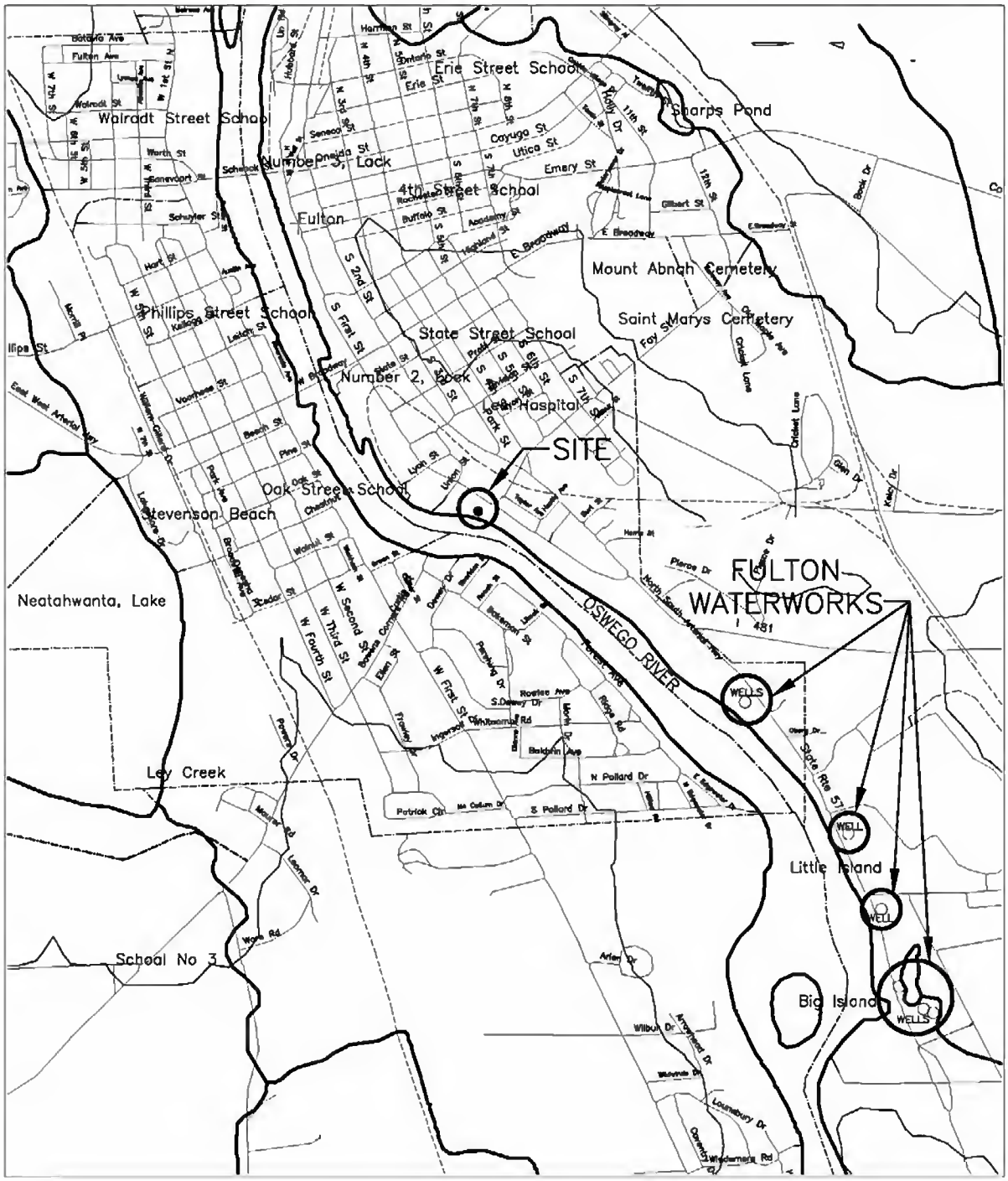
3. Work Plan, Remedial Investigation/Feasibility Study, South First Street Site, Fulton, New York, Niagara Mohawk Corporation, February 1998.

4. Remedial Investigation Report, South First Street Site, Fulton, NY. Dated May 06 and Revised March 2009

5. Feasibility Study Report, South First Street Site, Fulton, NY. Dated February 2009

6. Fact Sheet – Announcing Proposed Remedial Action Plan and a February 25, 2009 Public Meeting. Dated February 2009

FIGURE 1



NATIONAL GRID
SOUTH FIRST STREET SITE
FULTON, NEW YORK

SITE LOCATION MAP

QUADRANGLE LOCATION

2000 0 2000

SCALE IN FEET

O'BRIEN & GERE ENGINEERS, INC.

FILE NO. 1118-35165.002

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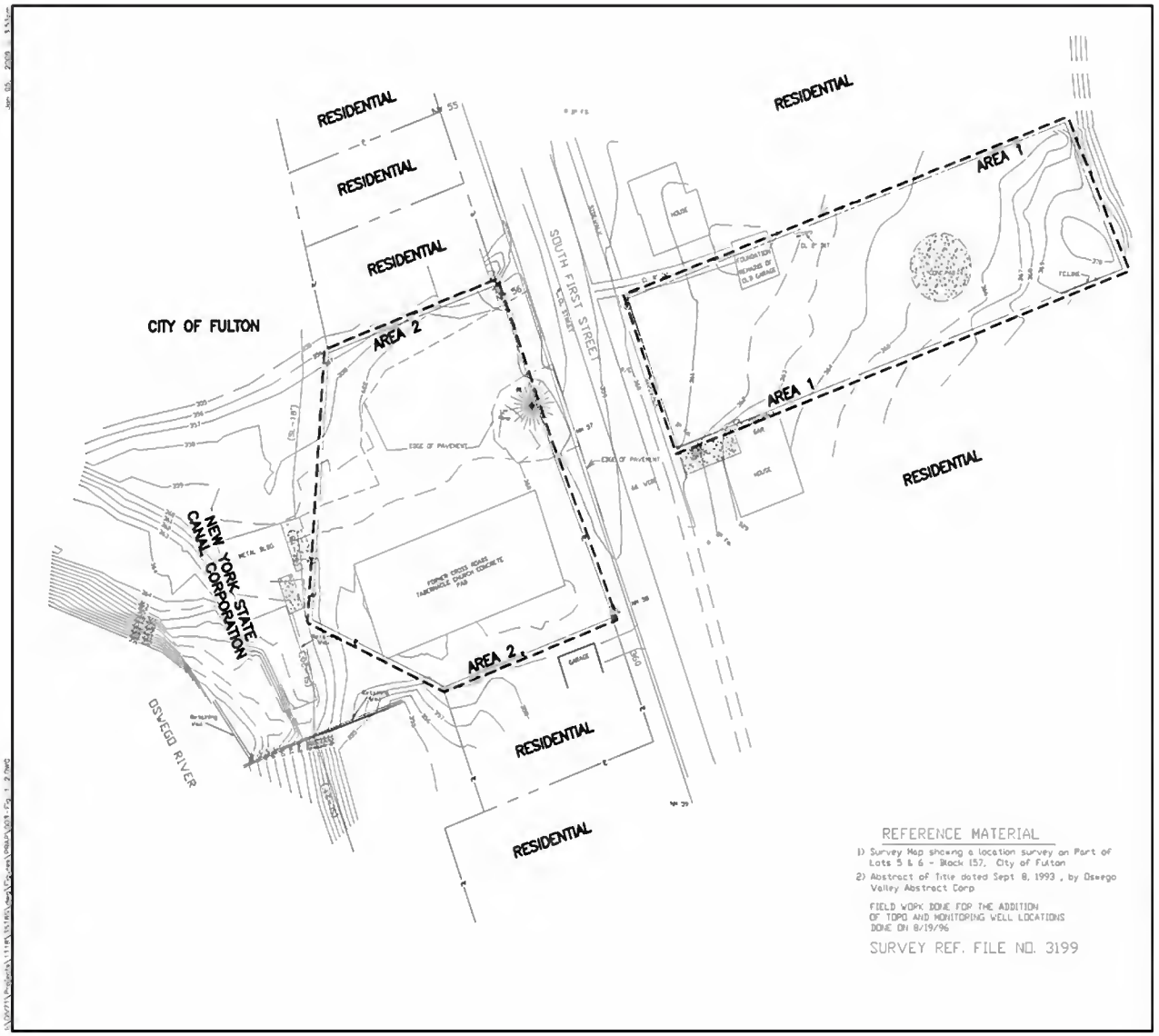
FIGURE 2



LEGEND

- PROPERTY LINES
- AREA BOUNDARIES
- RESIDENTIAL PROPERTY OWNERSHIP
- HISTORICAL STRUCTURES

NATIONAL GRID
SOUTH FIRST STREET SITE
FULTON, NEW YORK

SITE MAP

1"=50' 50 0 50

FILE NO. 1118.35165.003
JANUARY 2009

O'BRIEN & GERE ENGINEERS, INC.

FIGURE 3

LEGEND

HISTORICAL BUILDINGS
CONCRETE PAD
HISTORICAL FEATURES
PAVED AREA
PROPERTY LINE
APPROXIMATE BOUNDARY OF FORMER CANAL
APPROXIMATE SHORELINE
SAMPLE LOCATIONS
MONITORING WELL
PIEZOMETER
SOIL BORING
SOIL VAPOR
SURFACE SOIL
TEST PIT
MGP Impact Depth Intervals
>16 FT
12-16 FT
8-12 FT
4-8 FT
0-4 FT
SURFACE SOIL (TO DAL'S PAVE & RAIL)
0-2 FT Cyanide

NATIONAL GRID
SOUTH FIRST STREET
FULTON, NEW YORK

EXTENT OF MGP-IMPACTED MATERIAL IN SUBSURFACE SOIL AND SURFACE SOIL

0 25 50 100
Feet

JANUARY 2009
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Soil vapor sample locations are approximate.

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FIGURE 4

LEGEND

- EXISTING BUILDINGS
- SURFACE RESTORATION
- HISTORICAL BUILDINGS
- APPROXIMATE BOUNDARY OF SEWER CANAL
- APPROXIMATE SEWERLINE LENGTH TO BE REHABILITATED
- APPROXIMATE SEWERLINE LENGTH TO BE REPLACED
- MGP RELATED STRUCTURE (AND ADJACENT SOIL) TO BE REMOVED

MGP IMPACTED MATERIAL TO BE REMOVED

- 0-4 FT
- 0-7 FT
- SURFACE SOIL (TOTAL CPAH & PAH)
- 0-2 FT CYANIDE
- CONCRETE PAD
- ELEVATION CONTOURS
- PAVED AREA
- PROPERTY LINE

NATIONAL GRID
SOUTH FIRST STREET
FULTON, NEW YORK

ALTERNATIVE 2
LIMITED EXCAVATION
COVER AND SEWER
REHABILITATION

0 25 50 100
Feet

JANUARY 2009
0999.25.003

O'BRIEN & GERE ENGINEERS, INC

Notes:
Alternative 2 consists of:
- Environmental easement and site management plan.
- Ground water monitoring.
- Excavation of MGP-materials to the ground water table surface, to the extent practicable, at Area 1.
- Removal of MGP structures and foundations at Area 1 and Area 2 determined to contain MGP source materials to their full depth.
- Excavation and removal of soil containing visible coal tar or separate phase materials surrounding the structures and foundations in Areas 1 and 2 to depths up to 7 feet bgs, or to the extent practicable due to dewatering limitations.
- Rehabilitation of sewerline west of Area 2.
- Surface restoration at Area 2.
- Enhanced biological treatment considered at Area 1 and in vicinity of sewerline at Area 2.

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Soil vapor sample locations are approximate.

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FIGURE 5

LEGEND

- EXISTING BUILDINGS
- HISTORICAL BUILDINGS
- CONCRETE PAD
- APPROXIMATE LIMITS OF GROUND WATER CUT OFF WALL
- LOW PERMEABILITY CAP
- HISTORICAL FEATURES
- PAVED AREA
- PROPERTY LINE
- APPROXIMATE BOUNDARY OF FORMER CANAL
- APPROXIMATE SEWERLINE

MGP IMPACTED MATERIAL TO BE REMOVED

- 4-8 FT
- 0-4 FT
- SURFACE SOIL (TOTAL CPAH & PAH)
- 0-2 FT CYANIDE

NATIONAL GRID
SOUTH FIRST STREET
FULTON, NEW YORK

ALTERNATIVE 3
EXCAVATION, CAPPING, AND CUT OF WALL

0 25 50 100
Feet

JANUARY 2009
1118.35165

Notes:
Alternative 3 consists of:
- Environmental easement and site management plan.
- Ground water monitoring.
- Excavation of MGP-materiel to the ground water table surface, to the extent practicable, at Areas 1 and 2.
- Ground water cut off wall at Area 2.
- Low permeability cap at Area 2.
- Enhanced biological treatment considered at Area 1.

This document was developed in color. Reproduction in B/W may not represent the data as intended.
Soil vapor sample locations are approximate.

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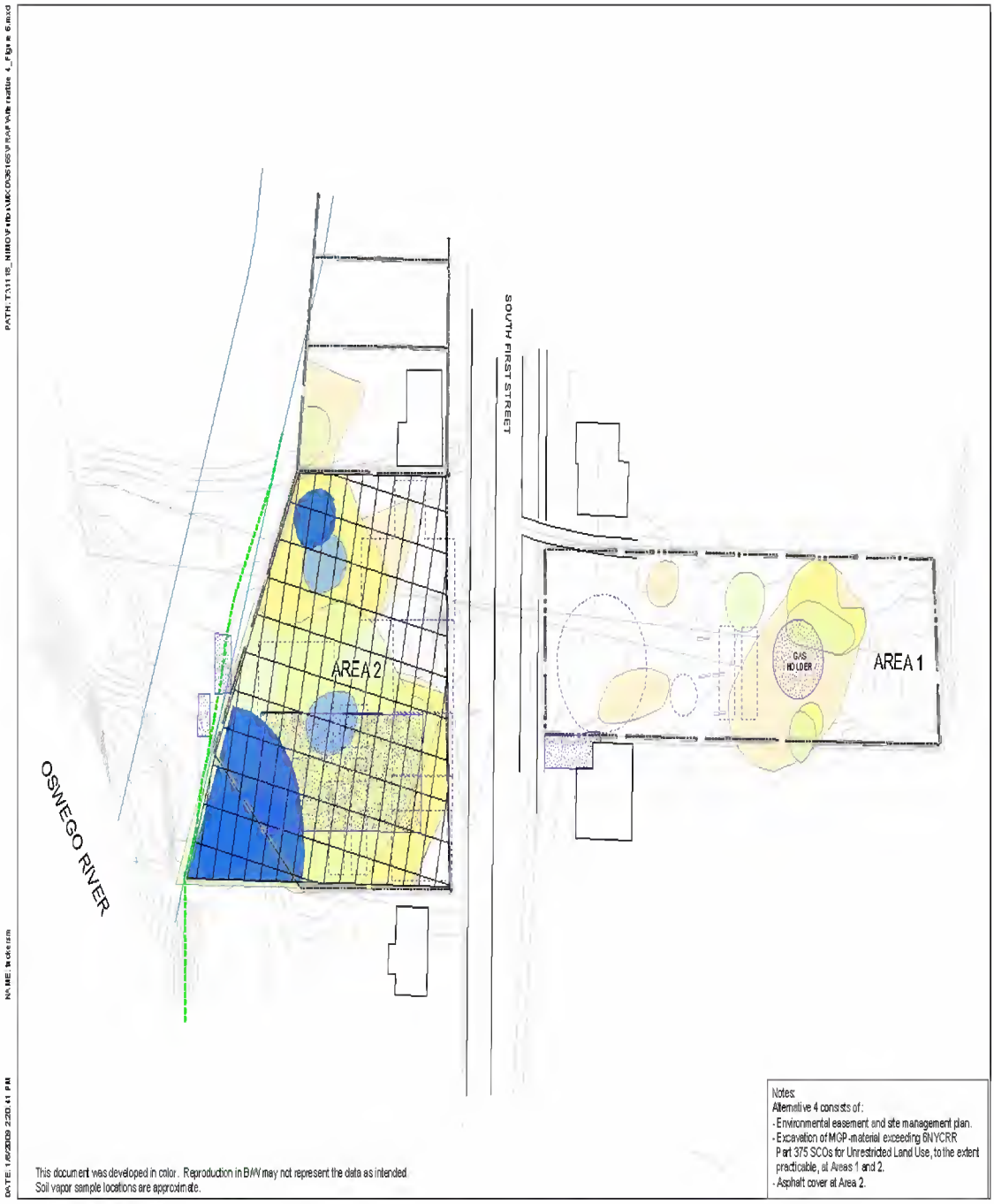

FIGURE 6

LEGEND

- EXISTING BUILDINGS
- HISTORICAL BUILDINGS
- CONCRETE PAD
- ASPHALT COVER
- APPROXIMATE BOUNDARY OF FORMER CANAL
- APPROXIMATE SEWERLINE
- HISTORICAL FEATURES
- PAVED AREA
- PROPERTY LINE

MGP IMPACTED MATERIAL EXCEEDING PART 375 SCOs TO BE REMOVED

- EXISTING BUILDINGS
- >16 ft
- 12-16 ft
- 8-12 ft
- 4-8 ft
- 0-4 ft

NATIONAL GRID
SOUTH FIRST STREET
FULTON, NEW YORK

ALTERNATIVE 4
EXCAVATION AND COVER

0 25 50 100
Feet

JANUARY 2009
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